

**REMARKS**

Reexamination and reconsideration of the subject application are respectfully requested in light of the comments which follow.

As correctly noted in the Office Action Summary, claims 20-31 and 33-45 are pending.

Applicants wish to thank Examiners Ward and Hevey for the courtesies extended to Applicants' representative during a personal interview conducted on April 6, 2009. During the interview, the construction of the claims, in particular, the scope of the transitional phrase "consisting essentially of" was discussed with respect to the applied prior art. While no formal agreement was reached, it is believed that the discussions were productive and will ultimately serve to advance the case.

***CLAIM REJECTIONS UNDER 35 U.S.C. §§102/103***

Claims 20-30, 39-41 and 44-45 rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,171,572 to Aozasa (hereafter "Aozasa") on the grounds set forth in paragraph 2 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

The present invention is directed to a composition having a high specific surface area, and good surface area stability, even upon exposure to high temperatures. Furthermore, compositions formed according to the present invention, when utilized, for example, as catalysts, exhibit high efficiency at low temperatures even with a low precious metal content.

A composition formed according to the principles of the present invention as set forth in amended claim 20. Amended claim 20 recites:

*20. A composition consisting essentially of zirconium oxide and at least one additive selected from oxides of praseodymium, lanthanum and neodymium, the composition having a specific surface area of at least 29 m<sup>2</sup>/g after calcination for 10 hours at 1000°C.*

Aozasa is directed to a zirconium-cerium composite oxide, which may optionally comprise one or more additives. However, Aozasa clearly fails to anticipate, or render obvious, the composition as set forth in claim 20.

As evident from the above, claim 20 is directed to a composition consisting essentially of zirconium oxide and at least one additive selected from oxides of praseodymium, lanthanum and neodymium. By contrast, Aozasa teaches limited to a composite oxide composed of both zirconium and cerium in substantial amounts.

The presence of cerium clearly has a material impact on the characteristics of such compounds. Evidence of this material effect can be found in the present specification. In this regard, reference is made to a "comparative example" 7 appearing on page 22 of the present specification in which a composition based on a mixture of zirconium and cerium oxides is formed. This comparative example is then analyzed for catalytic activity relative to a composition formed according to the principles of the present invention which contains zirconium and an additive, but lacks cerium (e.g., example 6). The results of this analysis appear in Table 5 on page 24 of the present specification. As illustrated therein, the presence of cerium appears to raise the ignition temperature utilized in the form of a catalyst, relative to a composition based only on zirconium and an additive, but without cerium. These

results appearing in Table 5 indicate that the presence of cerium has a material effect on the characteristics and properties of such compositions.

Although it is stated in MPEP 2111.03 that in certain situations "consisting essentially of" can be construed as equivalent to "comprising," such an interpretation is inappropriate where it is shown that the introduction of additional components would materially change the characteristics of the invention. For at least the reasons discussed above, evidence appears in the present specification which is sufficient to indicate that the presence of cerium has a material affect on the characteristics of compositions such as those embodied by the presently claimed invention. Thus, transitional phrase "consisting essentially of" appearing in the claims of the present application should not be construed so as to include or encompass compositions such as those described by Aozasa, which are in the form of a mixed or composite oxide of both zirconium and cerium. Therefore, reconsideration and withdrawal of the rejection is respectfully requested.

In addition, Aozasa teaches that if the cerium oxide content of the composite zirconium/cerium oxide is less than 5% by wt. (i.e., zirconium content more than 95), then "the oxygen absorbing and desorbing capability originating from cerium oxide is insufficiently exhibited" (column 4, lines 26-28). Thus, Aozasa teaches away from elimination of cerium oxide from the composition described therein.

As acknowledged on page 3 of the Official Action, Aozasa also does not teach the claimed specific surface area after ten hours of calcination at 1000°C. Nevertheless, it is asserted that the composition as taught by Aozasa would inherently possess the properties cited by the presently claimed invention. This assertion is respectfully traversed.

When assertions are made based upon features that are not expressly disclosed in the prior art, the Federal Circuit has repeatedly stated that in order to establish the inherency of the missing element it must be shown that the missing element must necessarily be present in the reference, and would be recognized as such by those persons of ordinary skill in the art. *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 20 USPQ2d 1746, 1749-50 (Fed. Cir. 1991); *In re Oelrich*, 666 F.2d 578,581, 212 USPQ 323, 326 (C.C.P.A. 1981) ("inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient"); *Standard Oil Co. v. Montedison, S.p.A.*, 664 F.2d 356, 372, 212 USPQ 327, 341 (3d Cir. 1981) (for a claim to be inherent in the prior art it "is not sufficient that a person following the disclosure sometimes obtain the result set forth in the [claim]; it must invariably happen").

If rejecting a claim requires reliance upon the alleged inherent features of the prior art, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original) (Applicant's invention was directed to a biaxially oriented, flexible dilation catheter balloon (a tube which expands upon inflation) used, for example, in clearing the blood vessels of heart patients. The examiner applied a U.S. patent to Schjeldahl which disclosed injection molding a tubular preform and then injecting air into the preform to expand it against a mold (blow molding). The reference did not directly state that the end product balloon was biaxially oriented. It did disclose that the balloon was "formed

from a thin flexible inelastic, high tensile strength, biaxially oriented synthetic plastic material." Id. at 1462 (emphasis in original). The examiner argued that Schjeldahl's balloon was inherently biaxially oriented. The Board reversed on the basis that the examiner did not provide objective evidence or cogent technical reasoning to support the conclusion of inherency.).

Therefore, a *prima facie* case based on assertions of inherency can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

As discussed above, the presence of cerium in compounds of the type set forth in the claims of the present application has a material effect on the characteristics and properties of such compositions. Thus, the premise that the compositions that both contain and lack cerium must necessarily possess the same properties, as clearly unfounded. Therefore, reconsideration and withdrawal of the rejection is respectfully requested for at least these additional reasons.

Claims 31, 36-38 and 42 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Aozasa on the grounds set forth in paragraph 5 of the Official Action.

It is alleged on pages 6-7 of the Official Action that the additional features cited in the above-listed claims are also either inherent, or would be obvious, in view of Aozasa. For at least the same reasons noted above, Aozasa fails to disclose, or even suggest, a composition consisting essentially of zirconium oxide and at least one additive, as required by the presently claimed invention. Thus, the above-listed

claims are also distinguishable over Aozasa for at least the same reasons noted above. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 33-35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Aozasa in view of U.S. Patent Application Publication No. 2003/0224931 to Yamamoto et al. (hereafter "*Yamamoto et al.*") on the grounds set forth in paragraph 6 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Claim 33 is directed to a method for preparing the composition of claim 20. Thus, the result of the recited method is the production of a composition which consists essentially of zirconium oxide and at least one additive selected from oxides of praseodymium, lanthanum and neodymium.

For at least the reasons explained above, Aozasa fails to disclose any method whatsoever which would result in the production of such a composition.

*Yamamoto et al.* is cited as allegedly teaching a method of making a zirconium-cerium oxide catalyst material optionally comprising alumina, silica or titania which includes formation of an aqueous mixture of cerium nitrate and zirconium oxynitrate, adding hydrogen peroxide and ammonia, forming a precipitate, adding cationic and anionic surfactants, and calcining the resultant mixture. It is further alleged that *Yamamoto et al.* teaches decomposition of zirconium and cerium compounds upon heating, and the addition of a surfactant to form homogenous precursor, followed by calcination. It is also asserted on page 7 of the Official Action, that *Yamamoto et al.* teaches the use of a suitable surfactant to improve the diffusion properties of the additive particles. However, even if the alleged teachings of *Yamamoto et al.* were applied in the manner suggested, the claimed invention would

not result. Namely, the alleged teachings of *Yamamoto et al.* fail to cure the deficiencies previously noted above in connection with the primary reference to *Aozasa*. Therefore, for at least this reason, the rejection should be withdrawn.

Moreover, claim 33 requires a method which includes "forming a mixture comprising compounds consisting essentially of compounds of zirconium and the at least one additive." By contrast, neither *Aozasa*, nor *Yamamoto et al.*, either taken alone or in combination, disclose or suggest a method which includes the step of forming such a mixture. Thus, for at least this additional reason, reconsideration and withdrawal of the rejection is respectfully requested.

Claim 43 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Aozasa* in view of U.S. Patent No. 5,063,192 to *Murakami et al.* (hereafter "*Murakami et al.*") on the grounds set forth in paragraph 7 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

It is alleged on page 8 of the Official Action that it would have been obvious to one of ordinary skill in the art, in light of the teachings of *Murakami et al.*, to have applied the composition taught by *Aozasa* to a substrate such as a honeycomb structure. Applicants do not concede to the correctness of these assertions. The applied teachings of *Murakami et al.* are insufficient to cure the deficiencies previously noted above in connection with the teachings of *Aozasa*. Namely, even if the teachings of *Murakami et al.* were applied to *Aozasa* exactly in the manner proposed in the grounds for rejection, the claimed invention would not result. Thus, reconsideration and withdrawal of the rejection is respectfully requested.

**CONCLUSION**

From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

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By:

  
Scott W. Cummings  
Registration No. 41,567

P.O. Box 1404  
Alexandria, VA 22313-1404  
703 836 6620